MSc Seminar

Monday April 25, 2022 at 10am via Zoom

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Detecting Accurate 3D Proxies for Single Objects using a Union

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Abstract:

3D object detection is a computer vision task that draws lots of attention recently. In 3D object detection, each detected object is enclosed by a cuboid 3D bounding box. Its results provide space information in real-world space, which the traditional 2D object detection lacks. Therefore, 3D object detection is popular in the field of autonomous driving and robotics. However, current 3D object detections representation only contains few shapes information of enclosed objects thus cannot accurately represent complex shapes. Lacking the explicit shape information will restrict the further utilization of 3D object detection in some areas such as 3D path planning and augmented reality. There exist some 2D polygonal object detection algorithms which retain the shape information of the objects, but extend these method into 3D space is non-trivial. Generating polyhedron in 3D space requires large computational cost.

The seminar will discuss a variant of 3D object detection algorithm. Instead of trying to enclose a detected object by a single polyhedron, the algorithm represents it with the union of multiple bounding boxes. Compared to the traditional single bounding box, a union of boxes has the potential of representing the object with convex or concave shapes and providing a much more accurate 3D proxy.